Application serial No. 10/709,167 Applicant: Ming-Nen Liang

Examiner: VO, THANH DUC

Art Unit: 2189

IN THE CLAIMS

Please amend the claims as follows.

1. (currently amended) A storage controlling and judging method of a flash

memory for writing data to said flash memory, the flash memory comprising a plurality

of sets of mother and child blocks, each set of said mother and child blocks having a

mother block and corresponding to a child block corresponding to said mother block for

increasing data storage speed to of said flash memory and using a correlation between

said mother block and said child blocks of said sets of mother and child blocks to

substantially reduce erasing frequency of said flash memory for extending a service life

thereof; the method comprising:

(a) receiving writing command;

(b) checking whether an address to write be written is in said sets of mother and

child blocks, wherein if no the address to be written is not in said sets of mother and

child blocks, proceed to step (c), and wherein if the address to be written is in said sets

of mother and child blocks, proceed to step (e);

(c) checking whether said flash memory has a <u>plurality of</u> sets of mother and

child blocks, wherein if yes said flash memory has the plurality of sets of mother and

child blocks, proceed to step (d);

(d) judging whether numbers of used sets of mother and child blocks reach a

preset number in said a manager, wherein if yes the numbers of the used sets of mother

and child blocks reach the preset number in said manager, a one of the used sets of

mother and child blocks is found and combined to create a new block, a blank block is

found and defined as a child block, and a block defined for writing as a mother block,

and then said mother block and said child block are combined to create a new set of

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mother and child blocks, then proceed to step (e f);

(e) executing the judging method for writing;

(f) executing writing from a pages in said child block of said set of mother and

child blocks;

(g) executing writing into said pages;

(h) judging whether a written page is a last page in said child block, wherein if

no the written page is not the last page in said child block, proceed to step (i); and

(i) judging whether to continue writing into said pages, wherein if not to

continue writing into said pages, proceed to step (j)-f; and

(j) ending the writing operation.

2. (currently amended) The storage controlling and judging method of the flash

memory according to claim 1, wherein the writing operation proceeds to step (l) if no

said flash memory does not have the plurality of sets of mother and child blocks in said

step (c);

, wherein (1) a blank block is found and defined as a child block, and said mother

block and said child block are combined as a new set of mother and child blocks, then

proceed to step (fe).

3. (currently amended) The storage controlling and judging method of the flash

memory according to claim 1, wherein the writing operation proceeds to step (k) if no

the numbers of the used sets of mother and child blocks do not reach the preset number

in said manager in said step (d);

, wherein (k) a blank block is found and defined as a child block, and a block for

writing is defined as a mother block, and then said mother block and said child block are

combined as a new set of mother and child blocks, then proceed to step (fe).

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4. (currently amended) The storage controlling and judging method of the flash

memory according to claim 1, wherein the writing operation proceeds to step (m) if yes

the written page is the last page in said child block in said step (h);

, wherein (m) said set of mother and child block are is combined as a new set of

mother and child blocks and said set of a mother block and a child block in said set of

mother and child blocks is are erased, then proceed to step (n) to judge whether or not to

continue writing into said pages, if yes to continue writing in said pages, proceed to step

(b).

5. (currently amended) The storage controlling and judging method of the flash

memory according to claim 4, wherein said step (n) is adapted for judging whether or

not to continue writing into said pages, if not to continue writing into said pages,

proceed to step (j).

6. (currently amended) A storage controlling and judging method of a flash

memory of a flash memory for writing data into said flash memory, said judging method

comprising:

(i) starting the judging method;

(ii) checking whether a starting page R for writing is at or ahead a validstarting

valid-starting page N in a child block of a set of mother and child blocks;

wherein if yes the starting page R for writing is at or ahead the valid-starting

page N in the child block of the set of mother and child blocks, proceed to step (iii);

(iii) comparing whether an ending page S for writing is at or behind an

validending valid-ending page M in said child block of said set of mother and child

blocks;

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, wherein if yes the ending page S for writing is at or behind the valid-ending

page M in said child block of said set of mother and child blocks, proceed to step (iv);

(iv) erasing said child block and replacing a new set of block to create a child

block and write writing data therein; and

(v) ending the judging method.

7. (currently amended) The storage controlling and judging method of the flash

memory according to claim 6, wherein if no the starting page R for writing is not at or

ahead the valid-starting page N in the child block of the set of mother and child blocks

in said step (ii), then check whether said starting page R for writing is behind said

validpage valid-ending page M in said child block of said set of mother and child blocks;

is determined,

wherein if yes said starting page R for writing is behind said valid-ending page

M in said child block of said set of mother and child blocks, proceed to step (vi);

, wherein (vi) from pages (M+1) to (R-1) is are copied from said mother block of

said set of mother and child blocks to said child block, and continued to write data

therein; otherwise, if not said starting page R for writing is not behind said valid-ending

page M in said child block of said set of mother and child blocks, proceed to step (vii);

, wherein (vii) said mother block and said child block of said set of mother and

child blocks are combined as a new mother block, then a new child block is created to

join said new mother block as a new set of mother and child blocks to continue writing

data, by and proceeding to step (v).

8. (currently amended) The storage controlling and judging method of the flash

memory according to claim 6, wherein if no the ending page S for writing is not at or

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behind the valid-ending page M in said child block of said set of mother and child blocks in step (iii), proceed to step (vii).